Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade K			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	WV	SCI.K.SC.O.K. 1.01	ask questions about themselves and their world.
Finding the Center of Gravity Using Rulers	WV	SCI.K.SC.O.K. 1.03	demonstrate curiosity, initiative and creativity by asking questions about the environment noting patterns and variations of natural objects (e.g., trees, leaves, or animal structures).
Finding the Center of Gravity Using Rulers	WV	SCI.K.SC.O.K. 1.04	explore and describe objects and events using the five senses to develop observational skills and make predictions based on personal observation.
Finding the Center of Gravity Using Rulers	WV	SCI.K.SC.O.K. 1.05	use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, or magnets).
Finding the Center of Gravity Using Rulers	WV	SCI.K.SC.O.K. 1.07	collect and record information in a variety of ways (e.g., drawings, weather calendar, or graphs).
Finding the Center of Gravity Using Rulers	WV	SCI.K.SC.O.K. 3.01	recognize that models are representations of real things.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.K.SC.O.K. 1.01	ask questions about themselves and their world.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.K.SC.O.K. 1.03	demonstrate curiosity, initiative and creativity by asking questions about the environment noting patterns and variations of natural objects (e.g., trees, leaves, or animal structures).
Finding the Center of Gravity Using Plumb Lines	WV	SCI.K.SC.O.K. 1.04	explore and describe objects and events using the five senses to develop observational skills and make predictions based on personal observation.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.K.SC.O.K. 1.05	use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, or magnets).
Finding the Center of Gravity Using Plumb Lines	WV	SCI.K.SC.O.K. 3.01	recognize that models are representations of real things.
Changing the Center of Gravity Using Moment Arms	WV	SCI.K.SC.O.K. 1.01	ask questions about themselves and their world.

Changing the Center of Gravity Using Moment Arms	WV	SCI.K.SC.O.K. 1.03	demonstrate curiosity, initiative and creativity by asking questions about the environment noting patterns and variations of natural objects (e.g., trees, leaves, or animal structures).
Changing the Center of Gravity Using Moment Arms	WV	SCI.K.SC.O.K. 1.04	explore and describe objects and events using the five senses to develop observational skills and make predictions based on personal observation.
Changing the Center of Gravity Using Moment Arms	WV	SCI.K.SC.O.K. 1.05	use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, or magnets).
Changing the Center of Gravity Using Moment Arms	WV	SCI.K.SC.O.K. 1.07	collect and record information in a variety of ways (e.g., drawings, weather calendar, or graphs).
Changing the Center of Gravity Using Moment Arms	WV	SCI.K.SC.O.K. 3.01	recognize that models are representations of real things.
Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 1			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	WV	SCI.1.SC.O.1. 1.01	ask questions about themselves and their world.
Finding the Center of Gravity Using Rulers	WV	SCI.1.SC.O.1. 1.04	use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, magnets, thermometer, seeds, or rocks).
Finding the Center of Gravity Using Rulers	WV	SCI.1.SC.O.1. 1.06	collect, record and compare information using a variety of classification systems (e.g., ordering, sorting, or sequencing) and using a variety of communication techniques (e.g., sketches, pictographs, or models).
Finding the Center of Gravity Using Rulers	WV	SCI.1.SC.O.1. 2.12	describe the changes in the motion of objects (e.g., slowing down, speeding up, or curving).
Finding the Center of Gravity Using Rulers	WV	SCI.1.SC.O.1. 2.17	use a model to compare land and water features on the Earth.
Finding the Center of Gravity Using Rulers	WV	SCI.1.SC.O.1. 3.02	use models as representations of real things.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.1.SC.O.1. 1.01	ask questions about themselves and their world.

Finding the Center of Gravity Using Plumb Lines	WV	SCI.1.SC.O.1.2.12	describe the changes in the motion of objects (e.g., slowing down, speeding up, or curving).
Finding the Center of Gravity Using Plumb Lines	WV	SCI.1.SC.O.1.2.17	use a model to compare land and water features on the Earth.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.1.SC.O.1.3.02	use models as representations of real things.
Changing the Center of Gravity Using Moment Arms	WV	SCI.1.SC.O.1.1.01	ask questions about themselves and their world.
Changing the Center of Gravity Using Moment Arms	WV	SCI.1.SC.O.1.1.06	collect, record and compare information using a variety of classification systems (e.g., ordering, sorting, or sequencing) and using a variety of communication techniques (e.g., sketches, pictographs, or models).
Changing the Center of Gravity Using Moment Arms	WV	SCI.1.SC.O.1.2.12	describe the changes in the motion of objects (e.g., slowing down, speeding up, or curving).
Changing the Center of Gravity Using Moment Arms	WV	SCI.1.SC.O.1.2.17	use a model to compare land and water features on the Earth.
Changing the Center of Gravity Using Moment Arms	WV	SCI.1.SC.O.1.3.02	use models as representations of real things.
Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 2			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	WV	SCI.2.SC.O.2.1.01	interpret science as the human's search for an understanding of the world by asking questions about themselves and their world.
Finding the Center of Gravity Using Rulers	WV	SCI.2.SC.O.2.1.04	demonstrate curiosity, initiative and creativity by observing, classifying, comparing and analyzing natural objects in the environment.
Finding the Center of Gravity Using Rulers	WV	SCI.2.SC.O.2.1.05	manipulate scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, thermometer, metric ruler, magnets, weather instruments, or calculators).
Finding the Center of Gravity Using Rulers	WV	SCI.2.SC.O.2.1.06	measure the length and width of various objects using standard and non-standard units (e.g., metric ruler, paper clips, or counting bears).

Finding the Center of Gravity Using Rulers	WV	SCI.2.SC.O.2.2.10	compare the effects of force on the motion of an object.
Finding the Center of Gravity Using Rulers	WV	SCI.2.SC.O.2.3.02	use models as representations of real things.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.2.SC.O.2.1.01	interpret science as the human's search for an understanding of the world by asking questions about themselves and their world.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.2.SC.O.2.1.04	demonstrate curiosity, initiative and creativity by observing, classifying, comparing and analyzing natural objects in the environment.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.2.SC.O.2.1.05	manipulate scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, thermometer, metric ruler, magnets, weather instruments, or calculators).
Finding the Center of Gravity Using Plumb Lines	WV	SCI.2.SC.O.2.1.06	measure the length and width of various objects using standard and non-standard units (e.g., metric ruler, paper clips, or counting bears).
Finding the Center of Gravity Using Plumb Lines	WV	SCI.2.SC.O.2.3.02	use models as representations of real things.
Changing the Center of Gravity Using Moment Arms	WV	SCI.2.SC.O.2.1.01	interpret science as the human's search for an understanding of the world by asking questions about themselves and their world.
Changing the Center of Gravity Using Moment Arms	WV	SCI.2.SC.O.2.1.04	demonstrate curiosity, initiative and creativity by observing, classifying, comparing and analyzing natural objects in the environment.
Changing the Center of Gravity Using Moment Arms	WV	SCI.2.SC.O.2.1.05	manipulate scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, thermometer, metric ruler, magnets, weather instruments, or calculators).
Changing the Center of Gravity Using Moment Arms	WV	SCI.2.SC.O.2.1.06	measure the length and width of various objects using standard and non-standard units (e.g., metric ruler, paper clips, or counting bears).
Changing the Center of Gravity Using Moment Arms	WV	SCI.2.SC.O.2.2.05	compare and contrast simple models of different kinds of habitats, including a forest and a stream.
Changing the Center of Gravity Using Moment Arms	WV	SCI.2.SC.O.2.2.10	compare the effects of force on the motion of an object.
Changing the Center of Gravity Using Moment Arms	WV	SCI.2.SC.O.2.3.02	use models as representations of real things.
Exploring the Extreme			

2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 3			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.1.01	recognize that scientific explanations may lead to new discoveries (e.g., new knowledge leads to new questions).
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.1.04	demonstrate curiosity, initiative and creativity by planning and conducting simple investigations.
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.1.06	support statements with facts found through research from various sources, including technology.
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.1.07	use scientific instruments, technology, and everyday materials to investigate the natural world.
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.1.09	apply mathematical skills and use metric units in measurements.
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.1.10	interpret data presented in a table, graph, map or diagram and use it to answer questions and make predictions and inferences based on patterns of evidence.
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.3.02	use models as representations of real things.
Finding the Center of Gravity Using Rulers	WV	SCI.3.SC.O.3.3.03	observe that changes occur gradually, repetitively, or randomly within the environment and question causes of changes.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.1.01	recognize that scientific explanations may lead to new discoveries (e.g., new knowledge leads to new questions).
Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.1.04	demonstrate curiosity, initiative and creativity by planning and conducting simple investigations.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.1.06	support statements with facts found through research from various sources, including technology.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.1.07	use scientific instruments, technology, and everyday materials to investigate the natural world.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.1.09	apply mathematical skills and use metric units in measurements.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.2.04	observe and describe relationships among organisms and predict the effect of adverse factors.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.3.02	use models as representations of real things.

Finding the Center of Gravity Using Plumb Lines	WV	SCI.3.SC.O.3.3.03	observe that changes occur gradually, repetitively, or randomly within the environment and question causes of changes.
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.1.01	recognize that scientific explanations may lead to new discoveries (e.g., new knowledge leads to new questions).
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.1.04	demonstrate curiosity, initiative and creativity by planning and conducting simple investigations.
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.1.06	support statements with facts found through research from various sources, including technology.
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.1.07	use scientific instruments, technology, and everyday materials to investigate the natural world.
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.1.09	apply mathematical skills and use metric units in measurements.
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.1.10	interpret data presented in a table, graph, map or diagram and use it to answer questions and make predictions and inferences based on patterns of evidence.
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.3.02	use models as representations of real things.
Changing the Center of Gravity Using Moment Arms	WV	SCI.3.SC.O.3.3.03	observe that changes occur gradually, repetitively, or randomly within the environment and question causes of changes.
Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 4			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.01	explain how new discoveries lead to changes in scientific knowledge.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.04	demonstrate curiosity, initiative and creativity by developing questions that lead to investigations; designing simple experiments; and trusting observations of discoveries when trying new tasks and skills.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.06	support statements with facts found through research from various sources, including technology.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.07	use scientific instruments, technology and everyday materials to investigate the natural world.

Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.09	construct a hypothesis when provided a problem.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.10	establish variables and controls in an experiment; test variables through experimentation.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.11	interpret data presented in a table, graph, or diagram and use it to answer questions and make decisions.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.1.13	apply mathematical skills and use metric units in measurements and calculations.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.2.22	predict and investigate the motion of an object if the applied force is changed.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.3.02	create models as representations of real things.
Finding the Center of Gravity Using Rulers	WV	SCI.4.SC.O.4.3.03	observe that changes occur gradually, repetitively, or randomly within the environment and question causes of change.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.01	explain how new discoveries lead to changes in scientific knowledge.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.04	demonstrate curiosity, initiative and creativity by developing questions that lead to investigations; designing simple experiments; and trusting observations of discoveries when trying new tasks and skills.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.06	support statements with facts found through research from various sources, including technology.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.07	use scientific instruments, technology and everyday materials to investigate the natural world.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.09	construct a hypothesis when provided a problem.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.10	establish variables and controls in an experiment; test variables through experimentation.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.12	draw and support conclusions, make predictions and inferences based on patterns of evidence (e.g., weather maps, variation of plants, or frequency and pitch of sound).
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.1.13	apply mathematical skills and use metric units in measurements and calculations.

Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.2.22	predict and investigate the motion of an object if the applied force is changed.
Finding the Center of Gravity Using Plumb Lines	WV	SCI.4.SC.O.4.3.03	observe that changes occur gradually, repetitively, or randomly within the environment and question causes of change.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.01	explain how new discoveries lead to changes in scientific knowledge.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.04	demonstrate curiosity, initiative and creativity by developing questions that lead to investigations; designing simple experiments; and trusting observations of discoveries when trying new tasks and skills.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.06	support statements with facts found through research from various sources, including technology.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.07	use scientific instruments, technology and everyday materials to investigate the natural world.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.09	construct a hypothesis when provided a problem.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.10	establish variables and controls in an experiment; test variables through experimentation.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.11	interpret data presented in a table, graph, or diagram and use it to answer questions and make decisions.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.1.13	apply mathematical skills and use metric units in measurements and calculations.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.2.22	predict and investigate the motion of an object if the applied force is changed.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.3.02	create models as representations of real things.
Changing the Center of Gravity Using Moment Arms	WV	SCI.4.SC.O.4.3.03	observe that changes occur gradually, repetitively, or randomly within the environment and question causes of change.
Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 5			
Activity/Lesson	**State**	**Standards**	

Jet Propulsion	WV	SCI.5.SC.O.5.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Jet Propulsion	WV	SCI.5.SC.O.5.1.02	recognize scientific knowledge is subject to modification as new scientific information challenges current explanations.
Jet Propulsion	WV	SCI.5.SC.O.5.1.05	cooperate and collaborate to ask questions, design and conduct investigations to find answers and solve problems.
Jet Propulsion	WV	SCI.5.SC.O.5.1.06	formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
Jet Propulsion	WV	SCI.5.SC.O.5.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Jet Propulsion	WV	SCI.5.SC.O.5.1.12	use inferential reasoning to make logical conclusions from collected data.
Jet Propulsion	WV	SCI.5.SC.O.5.3.02	construct a variety of useful models of an object, event, or process.
Vectoring	WV	SCI.5.SC.O.5.1.02	recognize scientific knowledge is subject to modification as new scientific information challenges current explanations.
Vectoring	WV	SCI.5.SC.O.5.1.05	cooperate and collaborate to ask questions, design and conduct investigations to find answers and solve problems.
Vectoring	WV	SCI.5.SC.O.5.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Vectoring	WV	SCI.5.SC.O.5.1.12	use inferential reasoning to make logical conclusions from collected data.
Center of Gravity, Pitch, Yaw	WV	SCI.5.SC.O.5.3.02	construct a variety of useful models of an object, event, or process.
Fuel Efficiency	WV	SCI.5.SC.O.5.1.02	recognize scientific knowledge is subject to modification as new scientific information challenges current explanations.
Fuel Efficiency	WV	SCI.5.SC.O.5.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Fuel Efficiency	WV	SCI.5.SC.O.5.1.12	use inferential reasoning to make logical conclusions from collected data.
Fuel Efficiency	WV	SCI.5.SC.O.5.3.02	construct a variety of useful models of an object, event, or process.

Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 6			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	WV	SCI.6.SC.O.6.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Jet Propulsion	WV	SCI.6.SC.O.6.1.05	cooperate and collaborate to ask questions, design and conduct investigations to find answers and solve problems.
Jet Propulsion	WV	SCI.6.SC.O.6.1.06	formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
Jet Propulsion	WV	SCI.6.SC.O.6.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Jet Propulsion	WV	SCI.6.SC.O.6.1.12	use inferential reasoning to make logical conclusions from collected data.
Jet Propulsion	WV	SCI.6.SC.O.6.3.02	construct a variety of useful models of an object, event, or process.
Vectoring	WV	SCI.6.SC.O.6.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Vectoring	WV	SCI.6.SC.O.6.1.05	cooperate and collaborate to ask questions, design and conduct investigations to find answers and solve problems.
Vectoring	WV	SCI.6.SC.O.6.1.06	formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
Vectoring	WV	SCI.6.SC.O.6.1.07	apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
Vectoring	WV	SCI.6.SC.O.6.1.08	use a variety of technologies and scientific instruments to conduct explorations, investigations and experiments of the natural world.
Vectoring	WV	SCI.6.SC.O.6.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).

Vectoring	WV	SCI.6.SC.O.6.1.12	use inferential reasoning to make logical conclusions from collected data.
Vectoring	WV	SCI.6.SC.O.6.3.02	construct a variety of useful models of an object, event, or process.
Center of Gravity, Pitch, Yaw	WV	SCI.6.SC.O.6.3.02	construct a variety of useful models of an object, event, or process.
Fuel Efficiency	WV	SCI.6.SC.O.6.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Fuel Efficiency	WV	SCI.6.SC.O.6.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Fuel Efficiency	WV	SCI.6.SC.O.6.1.12	use inferential reasoning to make logical conclusions from collected data.
Fuel Efficiency	WV	SCI.6.SC.O.6.2.23	explain motion in terms of frames of reference and analyze graphs depicting motion and predicted future motion.
Fuel Efficiency	WV	SCI.6.SC.O.6.3.02	construct a variety of useful models of an object, event, or process.
Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 7			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	WV	SCI.7.SC.O.7.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Jet Propulsion	WV	SCI.7.SC.O.7.1.05	cooperate and collaborate to ask questions, design and conduct investigations to find answers and solve problems.
Jet Propulsion	WV	SCI.7.SC.O.7.1.06	formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
Jet Propulsion	WV	SCI.7.SC.O.7.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Jet Propulsion	WV	SCI.7.SC.O.7.1.12	use inferential reasoning to make logical conclusions from collected data.
Jet Propulsion	WV	SCI.7.SC.O.7.2.24	perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
Jet Propulsion	WV	SCI.7.SC.O.7.3.02	construct a variety of useful models of an object, event, or process.

Vectoring	WV	SCI.7.SC.O.7.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Vectoring	WV	SCI.7.SC.O.7.1.05	cooperate and collaborate to ask questions, design and conduct investigations to find answers and solve problems.
Vectoring	WV	SCI.7.SC.O.7.1.07	apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
Vectoring	WV	SCI.7.SC.O.7.1.08	use a variety of technologies and scientific instruments to conduct explorations, investigations and experiments of the natural world.
Vectoring	WV	SCI.7.SC.O.7.1.10	utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, or identifying dependent and independent variables).
Vectoring	WV	SCI.7.SC.O.7.1.12	use inferential reasoning to make logical conclusions from collected data.
Vectoring	WV	SCI.7.SC.O.7.2.24	perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
Vectoring	WV	SCI.7.SC.O.7.3.02	construct a variety of useful models of an object, event, or process.
Center of Gravity, Pitch, Yaw	WV	SCI.7.SC.O.7.2.24	perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
Center of Gravity, Pitch, Yaw	WV	SCI.7.SC.O.7.3.02	construct a variety of useful models of an object, event, or process.
Fuel Efficiency	WV	SCI.7.SC.O.7.1.01	realize that scientists formulate and test their explanations of nature using observation and experiments.
Fuel Efficiency	WV	SCI.7.SC.O.7.1.11	construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
Fuel Efficiency	WV	SCI.7.SC.O.7.1.12	use inferential reasoning to make logical conclusions from collected data.
Fuel Efficiency	WV	SCI.7.SC.O.7.3.02	construct a variety of useful models of an object, event, or process.
Exploring the Extreme			
2006 21st Century Science			
Standards and Objectives			
West Virginia 21st Century Science			
Grade 8			
Activity/Lesson	**State**	**Standards**	

Jet Propulsion	WV	SCI.8.SC.O.8.1.01	formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.
Jet Propulsion	WV	SCI.8.SC.O.8.1.06	use appropriate technology solutions within a problem solving setting to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.
Jet Propulsion	WV	SCI.8.SC.O.8.1.07	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).
Jet Propulsion	WV	SCI.8.SC.O.8.2.22	quantitatively represent work, power, pressure (e.g., Work=Force x distance, Power=Work/time, or pressure=force/area) from collected data.
Jet Propulsion	WV	SCI.8.SC.O.8.2.30	model processes of soil formation and suggest methods of soil preservation and conservation.
Jet Propulsion	WV	SCI.8.SC.O.8.3.03	communicate experimental designs, results and conclusions using advanced technology tools.
Vectoring	WV	SCI.8.SC.O.8.1.01	formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.
Vectoring	WV	SCI.8.SC.O.8.1.04	conduct and/or design investigations that incorporate the skills and attitudes and/or values of scientific inquiry (e.g., established research protocol, accurate record keeping, replication of results and peer review, objectivity, openness, skepticism, fairness, or creativity and logic).
Vectoring	WV	SCI.8.SC.O.8.1.06	use appropriate technology solutions within a problem solving setting to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.

Vectoring	WV	SCI.8.SC.O.8.1.07	design, conduct, evaluate and revise experiments (e.g., compose a question to be investigated, design a controlled investigation that produces numeric data, evaluate the data in the context of scientific laws and principles, construct a conclusion based on findings, propose revisions to investigations based on manipulation of variables and/or analysis of error, or communicate and defend the results and conclusions).
Vectoring	WV	SCI.8.SC.O.8.2.22	quantitatively represent work, power, pressure (e.g., Work=Force x distance, Power=Work/time, or pressure=force/area) from collected data.
Vectoring	WV	SCI.8.SC.O.8.2.30	model processes of soil formation and suggest methods of soil preservation and conservation.
Vectoring	WV	SCI.8.SC.O.8.3.03	communicate experimental designs, results and conclusions using advanced technology tools.
Center of Gravity, Pitch, Yaw	WV	SCI.8.SC.O.8.2.30	model processes of soil formation and suggest methods of soil preservation and conservation.
Fuel Efficiency	WV	SCI.8.SC.O.8.1.01	formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.
Fuel Efficiency	WV	SCI.8.SC.O.8.1.06	use appropriate technology solutions within a problem solving setting to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.
Fuel Efficiency	WV	SCI.8.SC.O.8.2.20	quantitatively represent wavelength, frequency and velocity (e.g., v= gamma f).